

OPTIMIZATION OF BRAND MARKETING STRATEGY OF INTELLIGENT TECHNOLOGY UNDER THE BACKGROUND OF ARTIFICIAL INTELLIGENCE

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Abstract- With the progress of Internet technology and the rapid development of artificial intelligence, intelligent technology products rapidly grow up. However, influenced by many factors, the marketing status of this kind of product in recent years is not ideal, for example, big data leakage and other issues. Especially in recent years, because of the greater market competition, the marketing of intelligent technology brands is facing greater problems. i.e. purpose of this study is to analyze the current situation of brand marketing of intelligent technology under the background of artificial intelligence and propose the optimization strategy of brand marketing of such products, so as to promote the continuous improvement of brand marketing effect of intelligent technology. Based on artificial intelligence and the concept of brand marketing, through intelligent technology brand marketing investigation and experiment, the intelligent technology brand marketing status and current problems are analysed from marketing, product type, and product price, three-angle analysis of the factors that influence the marketing and Internet marketing, product quality, product pricing, and product development is put forward from the four angles of specific strategy of optimization of smart technology products' brand marketing. i.e. experimental results show that the year-on-year growth rate of smart technology brand turnover is decreasing at the present stage. i.e. increase rate of the turnover in 2019 is only 3.24%, far lower than that in 2015, and the growth rate of the turnover decreases by about 33%. At present, there are many problems in the marketing strategy of intelligent technology brands, and the optimization of marketing strategy is an urgent problem to be solved.

Keywords: Internet technology, artificial intelligence, Internet marketing, product quality, product pricing, and product development.

1. INTRODUCTION

Because of the continuous improvement of deep learning and computer hardware system, artificial intelligence is gradually developing towards a new stage. Artificial intelligence covers a wide range of technologies, mainly the study of computer thinking and intelligence, to promote that the computer can gradually simulate some of the human behaviors. Image recognition, robotics, and language processing are all research directions in this field. In recent years, because of the continuous development of artificial intelligence applications, the commercialization trend of artificial intelligence has become more and more obvious. Based on this background, various intelligent technology brands have been rising in the market. In the face of fierce market competition, the sales of intelligent technology brands have become a common concern of the society. The rapid progress of artificial intelligence has not only promoted technological innovation and changed people's daily life but also promoted the transformation of business model. For example, face recognition technology is applied to beverage vending machines. In the field of science and technology, in addition to specific technologies, marketing strategies also play an important role in the development and survival of enterprises. Technology plays a decisive role in product quality, while marketing strategies play a decisive role in product market value. Based on the background of artificial intelligence and market commercialization, the rise of any intelligent technology brand is closely related to brand marketing [1]. With the continuous development of intelligent technology, the competition of intelligent technology products becomes increasingly fierce and the sales of such products also face certain problems. The marketing problem based on this intelligent technology brand has become an urgent problem to be solved [2, 3]. Based on this, scholars at home and abroad have carried out a series of research studies and achieved relevant research results [4]. In the literature [5], millet intelligent household products as the research object under the background of artificial intelligence millet smart marketing strategy of science and technology are analyzed and the product quality, expand overseas market, and the ecological development put forward the marketing strategy of three angle optimization suggestions, which provide a certain reference value to other intelligent technology brand marketing. In the literature [6], based on the background of the development of deep learning technology, the authors analyze the impact of the weak sales growth of intelligent technology products and expound the factors affecting the marketing effect from the perspectives of sales mode and product competitiveness. In the literature [7], the authors start from the background of the rapid development of the Internet and put forward suggestions on the realization of effective brand marketing of intelligent technology based on the concept of mobile marketing Internet. For the

realization of the smart brand marketing strategy of science and technology under the background of artificial intelligence optimization and to promote the continuous increase of its marketing effect, based on the concept of artificial intelligence and brand marketing, through intelligent technology brand marketing investigation and experiment, the intelligent technology brand marketing present situation and current problems are analyzed; from marketing, product type, and product price, three angle analysis of the factors that influence the marketing and the Internet marketing, product quality, product pricing, and product development is put forward from the four angles of optimizing concrete strategy of intelligent technology products brand marketing [8, 9]. The research in this paper, on the one hand, is conducive to the improvement of marketing effect and, on the other hand, lays a certain guiding foundation for the subsequent research in related aspects [10].

2. METHOD

2.1 Artificial Intelligence

Artificial intelligence, referred to as AI, is an emerging discipline developed based on Internet technology [11]. In essence, artificial intelligence is an important part of computer science, which aims to explore the root of intelligence and produce intelligent machines similar to human intelligence in this lifetime [12]. The research fields of AI mainly include language image recognition, expert system, robot development, and natural language processing. Artificial intelligence is developed on the basis of the rapid development of information technology [13, 14]. It is an interdisciplinary subject established by a variety of disciplines, including computer science, information theory, psychology, and neurophysiology [15]. The intelligent behaviors that intelligent robots can perform are usually called artificial intelligence [16, 17]. The activities related to human intelligence include a series of thinking activities such as recognition, judgment, reasoning, and thinking. In the development of contemporary science and technology, artificial intelligence has shown great advantages, which are mainly reflected in the following aspects [18]: first, artificial intelligence has realized the supplement of human intelligence. Based on the progress of science and technology, human beings have created many complex machines, which have expanded the functions of their hands and feet [19–21]. Based on the corresponding extension of human thinking organs and intellectual functions, artificial intelligence has emerged as times require [22]. Therefore, artificial intelligence belongs to the inevitable result of machine evolution and is the materialized reflection of human intelligence in science and technology, which can continuously deepen human's understanding of the world. Second, artificial intelligence promotes the rapid liberation of human intelligence. The development of artificial intelligence represents the development of a new round of industrial revolution and plays an important role in the improvement of all aspects of human social life. The purpose of artificial intelligence research is to equip computers with human intelligence, so that they have certain abilities of autonomous computing, learning, and thinking and can replace human beings to complete some complex and difficult work [23]. Artificial intelligence mainly includes computer vision, natural language processing, speech processing, intelligent robot, and other related research fields. The current artificial intelligence system has been gradually established and applied to various fields [24, 25]. The application of artificial intelligence in brand marketing is based on algorithms such as PCA, LBP, migration learning, and measurement learning to achieve the application of graphics recognition, speech recognition, big data, and other technologies [26]. AI is an auxiliary tool for brand marketing. It can help marketers evaluate the marketing effect and make the marketing strategy more targeted.

2.2 Research Algorithms and Methods

2.2.1 Intelligent Algorithm

Suppose the number of features extracted from the analysis data of artificial intelligence physical education application is M , and they constitute an original feature set $F = \{F_1, F_2, \dots, F_M\}$, where m represents the number of original features. Since some features have little effect on the analysis result, they can be removed. If a feature is selected, its value will be 1; otherwise, its value will be 0. s_m , s_i value is 1 or 0. The mathematical model of artificial intelligence in the application performance analysis feature selection of intelligent technology products is as follows: $S = \{s_1, s_2, \dots, s_n, s_i \in \{0, 1\}, i = 1, 2, \dots, m\}$. (1) In this paper, support vector machine is selected as the application performance analysis algorithm of artificial intelligence in the field of intelligent science and technology. The decision-making method of artificial intelligence application performance analysis in the field of intelligent science and technology is as follows: $f(x) = \sum_{i=1}^n \alpha_i c_i k(x_i, x) + b$. (2) Among them, threshold b and artificial intelligence directly affect the effect of application performance analysis in the field of intelligent technology, which needs to be optimized. From equations (1) and (2), it can be seen that the purpose of feature selection optimization and algorithm parameter optimization is to realize the application performance of high-precision artificial intelligence in the field of intelligent science and technology, and its characteristics are related to the parameters of support vector machine.

2.2.2 SWOT Analysis

SWOT analysis is mainly used to analyze the four major environmental factors of an enterprise, including disadvantages, advantages, opportunities, and challenges. As a common way to analyze the organizational environment, SWOT analysis is widely used in the strategic development of an enterprise. This method mainly analyzes the internal and external competition conditions of the organization. Corporate culture, organization, and products are all internal factors, and the industry environment, market conditions, and competition environment

are all external environments. By enumerating and classifying the internal and external environments in detail and forming a matrix according to a certain way, the internal and external environments of an enterprise can be accurately analyzed and specific strategic planning can be made. In this paper, with the help of SWOT analysis, the author makes a comprehensive analysis on the marketing situation of intelligent technology products at the present stage and marketing factors and comes to the conclusion that the problem of weak sales at the present stage is the biggest problem to be overcome in the development process of intelligent technology products at the present stage and the sales amount of intelligent technology is far from shrinking in the proportion of market share. At the same time, this paper analyzes the factors affecting the insufficient product sales and puts forward the intelligent technology brand marketing strategy based on this.

2.3 Brand Marketing Strategy

2.3.1 Brand Building Method

Establishment of enterprise brand is not accomplished in an action, and it needs to follow certain steps. The steps of brand establishment mainly include the following aspects: first, analyze the industry environment and explore the concept of separation. Starting from the similar competition existing in the market, the position of competitors in the hearts of consumers is clarified, and the advantages and disadvantages of competitors are accurately found. Identify a particular concept to differentiate itself from its competitors. Second, ensure product quality. Product quality is the basis of establishing a good image. The quality concept proposed in this paper belongs to the comprehensive quality concept, including engineering quality and cultural quality. Third, ensure the integration and continuity of communication and application. If we want to implant the brand into the hearts of consumers, we must strive to spread the brand concept.

2.3.2 Implementation of Brand Marketing

Concept of brand marketing is to deepen consumers' understanding of enterprise brands and related products, so as to improve the competitiveness of enterprises. The construction of a huge three-dimensional sales network is not a high-level form of marketing. High-level marketing is to build an invisible marketing network in the hearts of consumers with the help of the symbolic role of the brand, so as to realize the spiritual transmission between the product and consumers and improve the recognition degree of consumers and investors for the product. Brand marketing refers to the process in which an enterprise creates brand value based on the customer's demand for the brand, thus generating brand benefits. Marketing means show the good image, reputation, and popularity of the enterprise in front of consumers, so as to establish solid brand awareness in the hearts of consumers. High level of product quality is the foundation of brand marketing. Only when the quality reaches the standard can the brand be quickly recognized by consumers. The foundation of brand establishment includes two aspects, namely, tangible products and intangible services. Specific products refer to the design, packaging, name, and other contents related to the product entity "Intangible Service," which refers to the service provided by the seller to the buyer to meet the needs of consumers after the products are sold. At the present stage, the overall quality of intelligent technology products is not much worse. From the perspective of consumers, consumers usually pay more attention to the service aspect of merchants. Therefore, from the perspective of long-term competition, enterprises must implement brand marketing in order to achieve long-term good development. From the perspective of the enterprise, the marketing method of the enterprise must take into account the interests of the enterprise and customer satisfaction. Brand is the symbol of enterprise image and the symbol of enterprise itself, product quality, and service. In essence, brand is not only a good embodiment of enterprise comprehensive strength but also an intangible asset of enterprise management level. It plays an important role in enterprise development and competition. Only successful construction and use of the brand can occupy a favourable position in the market. Especially since the economic globalization, some brands have been rising rapidly, and the competition between products has gradually shifted to the competition between enterprises. Therefore, the implementation of effective brand marketing is the top priority of enterprise development at this stage. In essence, a brand is a symbol, which is the concentration of key information of various types of enterprises, realizing the integration of credibility, products, technology, culture, and other information. In the society, it is necessary to create a good reputation and image of the enterprise, so that it is recognized by the public, in the hearts of consumers to depict the enterprise symbol is the process of brand building. One cannot simply use investment as a measure of brand value. At the present stage, the core competition of enterprises is gradually transferred to the brand competition, which is the decisive factor of the competitiveness of enterprises.

3. INTELLIGENT TECHNOLOGY BRAND MARKETING SURVEY

In order to optimize the brand marketing strategy of intelligent technology, the author conducted an investigation and analysis experiment on intelligent technology brands, which mainly consist of two parts: the first part is an investigation on the market situation of intelligent technology products. The author consulted the economic yearbook and relevant economic data websites and collected and sorted out the development data and market share data of China's intelligent technology products from 2015 to 2019. The second part includes smart technology brand marketing data collection. First, conduct field research on intelligent technology product enterprises, including sales data, marketing methods, and marketing effects of intelligent technology products, and finally form a research report. Second, using the method of online questionnaire, this paper analyzes the current situation

and existing problems of intelligent technology product marketing. The subjects of the questionnaire include marketers, experts, and consumers. The questionnaire includes marketing methods, marketing factors, and marketing problems. In this study, 300 online questionnaires were distributed and 279 valid questionnaires were recovered. After the completion of the survey and analysis experiment, the SPSS statistical analysis software was used to analyse and sort out the collected data, and the computer graphics software was used to draw the data chart. Based on the analysis of the data chart, the relevant conclusions of this paper were drawn. In addition, in order to ensure the accuracy and scientific of the research results, the author also consulted WanFang, CNKI, and other data websites, collected 12 relevant research literatures, and sorted out the data in these literatures. These data provide sufficient data support for the experimental research of this paper.

4. INTELLIGENT TECHNOLOGY BRAND MARKETING

4.1 Marketing Status Analysis

4.1.1 Market Status of Intelligent Technology Products.

Fig. 4.1 shows the development speed of China's intelligent technology products and the market share of such products from 2015 to 2019. From the data in the figure, it can be seen that, from 2015 to 2019, the development speed of intelligent technology has been continuously improved, gradually increasing from 41.32% in 2015 to 87.13%. Because of the rapid development of artificial intelligence technology, the development speed of intelligent technology products has been greatly improved in recent two years. It will increase by about 15% and 19% in 2018 and 2019, respectively. In addition, from 2015 to 2019, the share of intelligent technology products in the life cycle of Chinese science and technology products gradually increased, from 29.13% in 2015 to 60.31% in 2019, especially the market share of such products increased rapidly in the past two years. The market demand of this surface intelligent technology product is big, and the recognition degree of consumer is relatively high.

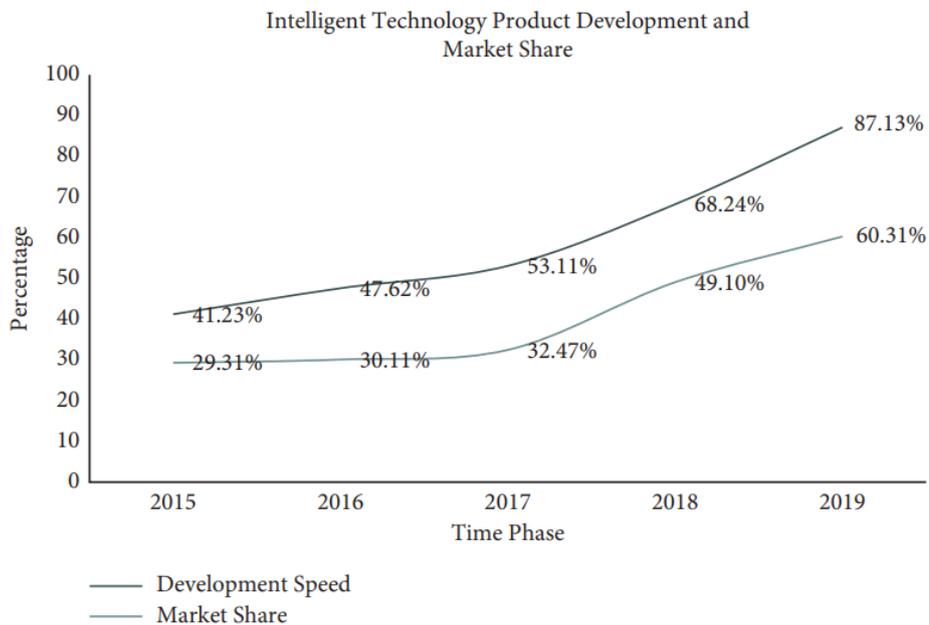


Fig. 4.1 Development and market share of intelligent technology products from 2015 to 2019

4.1.2 Intelligent Technology Brand Marketing Data

Table 4.1 and Fig. 4.2 both show the year-on-year growth of the turnover of smart technology brands from 2015 to 2019. It can be seen from the data in the chart that the year-on-year growth rate of the turnover of smart technology brands is decreasing from 2015 to 2019. The increase rate of the turnover in 2019 is only 3.24%, which is much lower than that in 2015, and the growth rate of the turnover decreases by about 33%. In addition, it can be seen from the line chart in Figure 2 that the growth rate of smart technology brands' turnover basically shows a straight downward trend. In addition, we can also see from the data in the figure that, in recent years, the share of the sales of smart technology in the market has been declining, gradually dropping from 47.21% to 21.05%. To sum up, the problem of weak sales growth is the key problem that smart technology brand marketing is facing at the present stage, and it belongs to the problem that needs to be solved urgently.

Table-4.1 Growth status of smart technology brand turnover

| Year | 2015 | 2016 | 2017 | 2018 | 2018 |
|-------------------------------------|-------|-------|-------|-------|------|
| year on year growth of turnover (%) | 36.28 | 32.14 | 20.01 | 10.31 | 3.24 |

*Data are based on the results of an experimental investigation

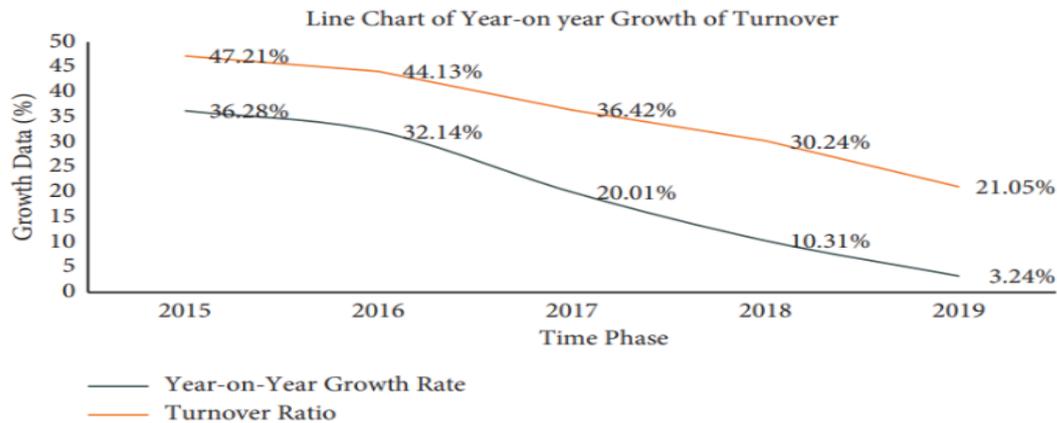


Fig. 4.2 Line chart of year on year growth of turnover

4.2. Marketing Strategy Optimization

4.2.1 Reasonable Implementation of Pricing Strategy

The price of products directly affects the sales of products, so the implementation of reasonable pricing strategy is conducive to the good marketing of intelligent technology products. The implementation of the pricing strategy mainly includes the following aspects: first, while ensuring the quality of the product, reduce the production cost as much as possible, so as to reduce the price level of the product and achieve the goal of “high quality and low price.” Second, define the price of the product. There will be competition among similar intelligent technology products in the market. Therefore, the brand should accurately find the products with the same competitive advantages as the brand and determine the most competitive pricing by referring to the prices of other brands. Third, implement differentiated pricing. Unified brand will have different series of intelligent technology products because the production cost, market demand, purchasing ability, and other factors are different, especially the different market competitiveness, so there is a certain difference in price. Therefore, differentiated pricing should be adopted for different series of products in smart technology brands.

4.2.2 Improve the Quality and After-Sales Service Quality

At the present stage, because of the insufficiency of intelligent technology and the relatively low investment of some brands in research and development, many intelligent technology products are faced with certain quality problems. The existence of enterprises is closely related to the quality of products, and technology occupies the core position in the development of intelligent technology products. Therefore, to promote the continuous improvement of the sales status of intelligent technology products, it is necessary to fundamentally improve the quality of products. In addition, when consumers purchase goods, they pay special attention to the after-sales service of the product. The quality of the after-sales service of the brand directly affects the satisfaction degree of consumers and the return purchase rate. With the help of big data analysis technology, the author predicts the marketing effect after the optimization of marketing strategy, compares the data before the optimization of marketing strategy, and finally obtains the data analysis results in Figure 4. Compared with before marketing strategy optimization, after optimization of intelligent technology products marketing strategy, the brand product sales rose year on year with a growth rate of around 7%, the market share increased by about 26%, and the overall marketing effect increased by 20%. Thus, it can be seen that the marketing strategy optimization scheme proposed in this paper has certain feasibility and effectiveness.

CONCLUSION

With the continuous development of Internet technology and artificial intelligence, intelligent technology products have developed rapidly. However, influenced by many factors, the marketing status of such products in recent years is not ideal. Therefore, promoting the improvement of marketing strategy is an urgent problem to be solved in the development of intelligent technology products. Based on the analysis of the marketing status of intelligent technology brands under the background of artificial intelligence, this paper draws the following conclusions: (1) In the recent years, the marketing effect of smart technology brands is poor, which is mainly affected by three factors: marketing method, product type, and product price (2) This paper proposes specific strategies to optimize brand marketing of intelligent technology products from four perspectives, including Internet marketing, product quality, product pricing, and product development and tests the feasibility and effectiveness of this strategy with the help of big data analysis technology

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